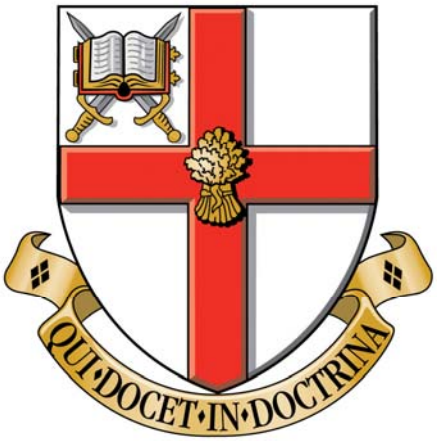

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GENETICALLY MODIFIED THEOLOGY: THE RELIGIOUS DIMENSIONS OF PUBLIC CONCERNS ABOUT AGRICULTURAL BIOTECHNOLOGY(1)

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I. Introduction

The latest massive controversies about genetically modified (GM) crops and foods in the UK and mainland Europe have underlined the novelty and complexity of the *human* issues raised by advances in biotechnology. Not only have the controversies found governments like our own unprepared for the unprecedented surges in public hostility towards this emerging technology, but they have also suggested the extent to which dominant 'expert' opinion, which has overwhelmingly favoured reliance on 'scientific' safety assessments of GM products on an individual case-by-case basis, may have been missing the point.

But what *is* the point? How *are* recent events to be understood? In this article, we want to argue that the current public anxiety about the genetic engineering of plants and animals has been radically misunderstood in a number of ways. First, when viewed on their own terms, public reactions can be seen as reasonable and sensitive rather than irrational and 'emotional'. Second, they are better understood as responses at the level of ontology and theology rather than simply as concerns about physical risk and health. Third, whilst people are concerned about the technologies themselves, their deepest unease seems to be in relation to the *spirit* in which these technologies are being developed and encouraged - the motives that animate this development, the level of seriousness and respect with which it is proceeding, and the assumptions about human beings and their place in the world that seem to underlie it.

The urgency of the need to develop a richer understanding of the dynamics of human responses to biotechnology cannot be doubted - the more so because, hitherto, such dimensions have been given only residual attention in countries like the UK. Genetic modification is a profoundly important technological process, for which huge scientific, political and economic expectations have been generated.(2) As fruits of the immense advances in molecular biology over the past three decades, such developments are claimed to have deep potential implications for future human welfare and development around the globe. Yet this

potential will be nugatory if it is rejected by the human beings who are its supposed future beneficiaries. And the possibility of such rejection has been made credible for the first time by the continuing events in Europe.

From the early 1970s, there has been recognition of the moral and ethical challenges posed by advances in biotechnology.(3) Countries like Britain have developed a patchwork of advisory committees (Advisory Commission on Releases into the Environment [ACRE], Advisory Commission on Novel Foods and Processes [ACNFP]) and so on, reflecting the agreed 'precautionary' approach prescribed in European Union member states. More recently, there has been a succession of reports and reviews by bodies such as the Royal Society, the Nuffield Council on Bioethics and the Royal Commission on Environmental Pollution. Overwhelmingly, such studies have focused on particular products and processes, either narrowly on questions of risk and safety, or more broadly on their moral acceptability. The core problem tends to be pictured as being how to arrive at adequate moral, ethical or even theological *evaluations* (which are seen, by implication, as soft, if socially very important, issues of judgment) of matters of scientific *fact* (which, by contrast, are purported to reflect hard and objectively specifiable ontological reality).

In the present context, one immediately awkward implication of this approach is that it tends to give implicit support to an understanding of 'the public' which is in itself demeaning - and indeed thoroughly question-begging. If the task of moral, ethical and theological reflection comes to be seen as the provision of a distinctive form of 'expert' appraisal of developments in the physical-biological domain, then 'ordinary people' who react against such developments in ways which appear to be at odds with approaches emanating from such expertise will tend to be pictured, by implication, as by contrast less than 'expert' - their reactions untutored, 'emotional' or even, in the worst case, 'irrational'. Indeed, much 'informed' comment on recent events, in news media and by politicians, has had this flavour. When the GM controversy erupted in Britain in early 1999, commentators from all sides of the argument - politicians, leader-writers, and scientific institutions alike - sought to distinguish between supposedly 'rational' (i.e. scientifically or politically justified) concerns about GM developments, and those which are simply 'hysterical' or 'media induced'.

Our own approach has a different starting point. To understand the human dynamics now in play, there appears to us an urgent need to focus in a far more sensitive and discriminating fashion on the quality and texture of the actual reactions of ‘ordinary people’ themselves in relation to such matters. From a Christian perspective, this means focusing with empathic sensitivity - with what Simone Weil calls *attention* - on the integrity of what particular people are saying, singly and in groups, about their own reactions, both to the new GM issues, and to the ways in which such technological artefacts are now being handled by governments and regulatory bodies.(4) Respectful examination and interpretation of such reactions, we suggest, may offer insights into the deeper human significance of biotechnology’s current travails.

It happens that research by the authors and their associates provides a body of raw material for such a task. In particular, the 1997 study at the Centre for the Study of Environmental Change, *Uncertain World: Genetically Modified Organisms, Food and Public Attitudes in Britain*, offers insight into the finer grain of a range of relevant public responses.(5) The material in question was generated through focus group discussions involving people from a spectrum of social classes and life stages, as part of an attempt in late 1996 and early 1997, *well in advance of the recent upsets*, to gain insight into then-latent concerns and anxieties about GM prospects and developments.

A key finding from *Uncertain World* was the glaring gap between the often unspecific and inchoate character of ‘lay’ public concerns about biotechnology (‘Where is this leading?’; ‘Won't it lead to unanticipated problems, as has tended to happen with novel technologies on the past?’; ‘Who on earth can we trust in this post-BSE world?’; ‘What crucial, and by definition unspecifiable, unknowns are yet to be identified?’) and the hard-edged, one-issue-at-a-time, reductionist scientific assessments of the official political oversight bodies (ministerial advisory committees, scientific advisers, EU expert scientific panels, and so on). The sense of such a gap - and the understandable if largely unarticulated unease it engenders, even in individuals untutored in the nuances of constitutional political accountability - was all the more striking for the fact that at that stage (i.e. in early 1997) there was no acknowledgement whatsoever by the powers-that-be that any such mismatch existed. The authors of *Uncertain World* concluded that the

political legitimacy of the prevailing regulatory arrangements was probably highly brittle — a conclusion which appears now to have been vindicated by the turbulent GM events of 1999, and the associated bewilderment of the responsible regulatory bodies.(6)

A corollary was that more useful analytical insights for interpreting the *Uncertain World* focus group discussions were found to be available more in the domains of the sociology of knowledge - particularly, recent insights concerning the social dynamics of contending conceptions of ‘scientific uncertainty’ and ‘public risk perceptions’ - than in more mainstream moral and ethical commentaries.(7) In other words, the concepts and vocabularies of ‘risk society’ and the recent social scientific understanding of human responses to contemporary cultural change turned out to help constitute more accurate ‘predictions’ of public responses than did the officially dominant tools of analysis.(8)(9) There are now signs, in the wake of the current brouhaha, that such insights are beginning to have an impact on public policy reflection.(10)

Nevertheless, the *Uncertain World* focus group materials pointed to a host of further questions of a normative kind, not addressed in the study itself. It is these that provide a useful starting point for the present article. For example: In articulating their concerns about biotechnology developments (the same concerns left unaddressed within the official regulatory frameworks), what implicit picture of the human-nature relationship were people tacitly assuming? What tacit ‘cosmology’, or even ‘ontology’, is being predicated? What accommodations with ‘uncertainty’ were being assumed as normal, from which GM developments were intuited to be a departure? Were people *really* hostile to human-induced changes to the ‘natural’ world, or could the anxieties being expressed on this score be palliated if there was greater confidence in their overall political supervision? What normative model of the very notion of ‘rationality’ is appropriate when issues concerning human intervention in the very processes of life itself are at issue?

As we argue below, questions of these kinds touch on deep issues concerning the nature of human personhood - indeed of human nature itself. It seems conceivable that the intensity of current controversies around genetically modified crops and foods arises in part from the fact that, in their regulation in the public domain,

conflicting ontologies of the person are making themselves felt in the politics of everyday life. If this is the case, then Christian theological understandings of the person may be of central analytical significance for helping throw light on what has been going on.

It is this intriguing possibility - that theological perspectives may now be indispensable in helping explain to largely secular institutions the sources and dynamics of conflicts now threatening to paralyse the development of what is being posited as a key technology for the twenty-first century - that we seek now to outline. In the next section we discuss relevant features of the *Uncertain World* focus group transcripts. This leads, in the third section, to a consideration of the ways in which prevailing strains of theological reflection have been considering broadly these same phenomena. And in the last section, we try to set out some of the challenges posed by our analysis, both for political institutions and for the role of theology itself.

II. The Nature of Public Concerns

1999 has been a year of immense controversy around Europe concerning GM food and agricultural products. Yet, in Britain at least, the outlines of tensions resulting in such upheavals were evident in qualitative research undertaken three years previously, in 1996-1997, as part of the study published as *Uncertain World*. Focus groups involving people from a variety of social groups and life stages provided the framework for an exploration of *public* views, actual or emergent, about GM prospects, as well as a basis for subsequent comparisons with *official* responses.(11)

In the research, the single most recurrent source of unease to emerge concerned the issue of *tampering*. At one level, GM developments were felt to be yet another stage in intensifying patterns of industrial interference with the ‘natural’ character of foods:

M: It sounds dangerous and unnatural ... I get the impression that all the food’s been meddled with in a laboratory before it reaches the supermarket . . . It's like, you know, these fruits they inject with stuff to keep apples redder for longer and things. I want food to be fresh. I don't want it to have all this stuff

in it ... But that's like scientifically taking natural food and making it unnatural.

T: ... they're going to do a lot more messing about and I don't know why they don't just miss that bit out and hurry up and make three pills, breakfast, dinner and tea. We'd all have a lot less to worry about (laughter) . . . You get shades of Adolf Hitler, you know, you get the supreme fruit and veg ... (*North London Working Mothers group*)

But beyond this, GM crops and foods seemed to point to a qualitatively new phase in interference with *nature itself*:

R: It's messing about with nature, isn't it? I'm not sure if that's a good or bad thing . . . That's it. Tampering with nature. What damage is it going to do? They're messing around with nature like that, what damage is it going to do to the environment? In twenty or thirty years' time? I mean, maybe you won't be able to grow your own vegetables then. Because of the damage to the ozone layer or something like that. . .
(*North London 'Green Consumers' group*)

J: When I look at it I think oh, they're dabbling in nature aren't they? You read scientific developments, that jumps out at me, scientific developments . . . You think, well they're trying to, you know, genetically change things and all this, well what are they putting in it to genetically change it?
(*Lancashire Working Women group*)

M: It doesn't seem natural... for man to interfere with the nature of things. I know processes of evolution, everything goes through changes, sometimes for the better, sometimes for the worse, but I'm not sure whether man should play God and change things for better, for the lucre at the end of the day …
(*Lancashire 'Risk Takers' group*)

Strong as such concern was, however, it was less than absolute. Many people were prepared to discriminate between different potential uses of GMs, according

to the particular purposes to which they might be put:

C: Annoyed I can't have any control over it. But then in the next breath I understand that change has to happen, but I don't always think it happens for the right reasons. I think medicine is the right reason. I think productivity levels, to increase consumer power, to increase profit, are not. Not when it means injecting sheep and getting different kinds of milk from them . .. (*Lancashire Working Women group*)

B: (Looking at a picture) . . . struggling up a path to the bright sunlight ahead and that's what I feel we're doing at the moment. We're struggling through a path of tangled weeds and don't knows and worries and decisions and we don't know what we're going to find when we get to the end.
Mod: A good path or a bad path?
B: I think it's a rocky path.
(*Lancashire Churchgoers group*)

Such ambivalence recurred in a number of the groups. There was extensive and profound unease at the prospect of the imagined increased pervasiveness of GM foods. This was in 1996-97, when there had so far been little or no *public* discussion of the implications of GM crops in Britain. But at the same time there was little evidence of any *reflex* hostility to the technology, or of any wish to avoid engagement with the complexity of what was at stake. When seen in context, the unease that people expressed was seldom comprehensively dismissive. Interference with nature was acknowledged frequently to be a reality of human existence and development - but at the same time the *reasons* for and motives behind particular classes of such interference, and the terms on which it might be undertaken, demanded review and extreme caution:

M: ... there’s a saying that ‘if it isn't broke, don't bother trying to fix it’ — and there's nothing wrong with food as it is naturally except that it hasn't got a long shelf life. So really I can see pound signs all over that. . . that's all it's really to do with.
(*Lancashire Working Women group*)

P: ... in a world where the population is expanding at a high rate you've got to, in all areas, be as efficient and use technology in the most efficient manner, and in this respect, although I'm not particularly happy perhaps with choosing that food myself, I think it's something which has to progress to help everybody, or at least to test whether or not the results would be beneficial to help everybody.
(*Lancashire Churchgoers group*)

H: ... well the other one I suppose, in a sense it had a purpose behind it — it was going to help some one with a serious, hopefully serious, illness and there might possibly be an argument for it. But I don't think there's an argument for feeding an animal to make it grow more quickly... just so that we can kill them more quickly and eat them more quickly. I don't like that. That's immoral to me ...
(*Lancashire Churchgoers group*)

Such tentative and highly selective acknowledgement of possible benefits was tempered, repeatedly, by deep anxiety about the ill-defined prospect of potentially enormous adverse - and irreversible - consequences:

S: Once you've genetically engineered a pig, it's always going to stay genetically engineered. But how are you going to reverse it?
R: If you find out there's a problem in ten years . . .
S: You can't and it will go on for ever, not just for the near future. This is permanent, once you've genetically engineered something. I don't think it will alter naturally, although nature will probably take over at one time and cause a problem.
R: Right, so if you tinker with something then ...
S: It will be passed on to the future . . .
Mod: It will be passed on?
S: It's irreversible though isn't it, with genetics I would imagine.
(*Lancashire 'Risk Takers' group*)

L: ... I'm not in control of this. I have no control over this. It's gonna happen and I can't... you know . . .

(*Lancashire Working Women group*)

G: They're messing around with food. The next thing is going to be human beings . . .
(*Lancashire Churchgoers group*)

What theological significance might this have? We suggest that a fruitful approach is to explore what might be inferred *ontologically* about people's various reactions, viewed from the perspective of Christian understandings of the human person and of human interdependence.

Seen in this light, several points stand out. First, people appeared to be responding from within a sense of a given *order* - a *natural* order, the boundaries of which were felt to be challenged radically by the prospect and potentialities of genetic modification: fundamental categories in 'nature' were being threatened through human intervention, with unforeseeable potential consequences.

Yet second, there was tacit acknowledgement that human beings might be *justified* in certain circumstances in creative interactions (interference) with such *order*. But this should only occur if the purposes were somehow the *right* ones - which appeared to mean, governed by genuine compassion and charity towards other beings.

However, third, such a condition was felt unlikely to be met. There was a recurrent fatalism and cynicism about the prospect of modifying the momentum of GM developments, in order to respect 'moral boundaries and the true range of uncertainties. The supposed collusion of governments and interested corporations was seen as making the widespread introduction of GM products inevitable, with scientific reassurances operating, as in the recent BSE-CJD (mad cow disease) disaster, to reinforce such momentum, neglectful of possible as yet unidentified dangers.

In our view, when combined, such findings suggest that at the core of the concerns emerging from the focus group discussions were issues about human *responsibility* and *control*, under conditions of fundamental - indeed, ontological -

uncertainty and ignorance. Whilst prepared to countenance the transcendence of ‘natural’ boundaries for specified benign purposes through processes of genetic modification, people tended tacitly to dismiss the possibility that the appropriate surrounding conditions or safeguards could or would ever be achieved. One pointer to this in the focus groups was the recurrent and disturbing fatalism and sense of disablement pervading people's discussion of their own lack of agency in relation to the ways in which matters were now developing. Sometimes the resulting sense of impotence took a heightened, even poetic, form:

S: I started out not too bad when I had the discussion. I thought I’d have an open mind about it, but I’ve changed my mind. As soon as I saw that about the human gene, suddenly the enormity of it made me feel really awful. I got an awful feeling about it, because I thought it was something that ... I think we’re touching things that we don't realise and I think we're taking things out of the earth, and we're now trying to correct it by using things like genetic engineering, because mistakes were made. And I feel time's just ticking by and we don’t realise what's going to happen in the future. I think something terrible could happen. It's given me a bad feeling really.

Mod: So it's as if we’re trying to fix something which is mixed up with something ... ?

S: Yes, because the earth hasn’t got what it used to have. We feel we have to put something back into the food to make it better, and maybe we're correcting things in the wrong way. I don’t know . . .

T: It’s a frightening thought to think that time’s ticking away though . . .

S: Yes. It’s something that I'd like to put at the back of my mind now. I wouldn't like to think about it again. I probably wouldn't — but when we talk about it, it does bring it to your mind. But then I'll probably put it to the back of my mind now . . .

(*Lancashire Working Women group*)

In the *Uncertain World* report, a key empirical finding concerned the stark contrast that emerged between the broad open-ended character of such concerns about GMOs on the part of lay people, and the narrowly constrained positivistic scope of the official regulatory frameworks of GM regulation in Britain.(12) Where people in the focus groups consistently highlighted their unease about broad trajectories of

GM developments (Why was this being done? In whose interest? With what cumulative implications and as yet unknown consequences?), the panoply of official advisory committees and authorisation processes had a narrow one-product-at-a-time evaluation focus, and avoided such wider questions. This, *Uncertain World* argued, amounted to 'a *de facto* process of political denial, on a matter of substantial public importance'. And the subsequent 1999 GM brouhaha appears to have followed precisely the fault lines between these two contrasting representations of what was at stake.(13)

In the context of the present paper, that same contrast between the two outlooks might fruitfully be represented as a conflict between two different *implicit theologies of the person* - between an 'official' picture which, through its normative insistence on the relevance for social decisions of only a restricted number of scientifically measurable parameters, implied one version of what were to berecognised as justified human concerns; and a 'lay' picture in which a far wider range of implications of GMOs pointed to deeper issues of human relationships with the natural order under real-world conditions of contemporary political economy. Alongside this tension there are clearly differences in the value being given to science. In the 'official' picture there is a positivistic view of science, that is it is deemed to be the only worthwhile source of knowledge. On the other hand, the 'lay' picture is more likely to view science in its context as a human endeavour. Yet it seems to us that contrasting views of science presuppose the implicit theologies of the person and that it is these differences that are of particular significance in interpretation of current events.

Hence, we suggest that picturing the tensions in *theological* terms may yield a richer and more convincing account of the intensity of recent controversies in Britain than some of the accounts which have been offered so far - for example, that public 'emotionalism' and 'irrationality', fanned by an hysterical media, has overwhelmed the 'objective' scientific facts, or that environmental pressure groups have somehow directed public sensibilities in unprecedente^ effective fashion. Rather, it appears to us that the dominant UK approaches to GM food/crop promotion and regulation may have been *insulting* the self-understanding of 'ordinary people' about matters of considerable existential moment to them - and that such experience may have been intensified by the chronic lack of any

adequate public discourse or context in which such matters can be acknowledged adequately and given respectful shared public *attention*.

In short, what has burst forth in recent GM events, we suggest, has been the long-burgeoning crisis in societies like our own concerning *conflicting representations of the human* - of tensions between different tacit understandings of human essence, in a way that is inclusive of the relation between human beings and 'nature', and to one another.

And it is only when considered through the conceptual resources of *theology*, deployed in new ways, that insights into such matters - of mounting social and political importance in increasingly technologically-driven democracies like our own - can begin to be generated.

III. The Religious Debate

So far, we have raised issues arising from the focus group research in *Uncertain World*, and suggested some fresh interpretative perspectives that explore implicit religious dimensions. But how far does our approach match the 'official' theological debate conducted by church groups, religious organisations and theologians? A comprehensive survey of the literature in this area is beyond the scope of this paper; even more so would it be to attempt to discuss the unofficial responses of the churches to genetic engineering of non-humans, which, in the case of the Church of England, for example, take the issue with much greater seriousness. Nonetheless, we can point to a number of trends.(14)

First, certainly prior to the early 1990s in the Protestant Churches and even later in the Roman Catholic Church, there has been a strong emphasis in the religious interventions on potential *impacts* on human beings. The implicit (and even sometimes explicit) premise of this emphasis seems to be that the genetic modification of non-human animals and plants raises no fundamental ethical issues per se. The most clearly *ethical* responses, for example in the official booklets produced by the Church of England and the Roman Catholic Church, have concerned *human* genetic technology.(15) The World Council of Churches, similarly, has been primarily concerned with the possibility of manipulation of human life by geneticists and what this might mean for theology and ethics.(16)

While at the popular level there has initially been fear, mistrust and suspicion of genetic engineering in the churches, the official position is more often positive. Dyson suggests that this is related to the number of participants who are also scientists.(17)

Interventions that *have* addressed the issue of non-human genetic engineering prior to the 1990s have tended to suggest it is amenable to simple cost-benefit calculations concerning the impact on humans. Since the 1990s the Scottish and Methodist Churches have been particularly active in promoting a more rounded view of the ethical implications of non-human genetic engineering.(18) However, a view that is dismissive of the significance of the genetic engineering of non-humans still persists in official documents. For example, even as late as 1998, in the Church of England response to the Nuffield consultation document on modified crops, the team, chaired by the scientist John Polkinghorne, found no real reason for concern about genetic modification of plants on theological or ethical grounds.(19) So far there has been no official Roman Catholic response to genetic engineering outside that of humans. However, Pope John Paul II has indicated positive approval of 'beneficial applications in the field of animal and vegetable biology which can be useful in food production'.(20) Very recently the Pontifical Academy for Life produced a slim volume, published only in Italian, dealing with the religious implications of genetic engineering of non-humans. It appeared to be similarly positive in line with the earlier papal statement about the possible benefits of genetic engineering of animals and plants for humanity, with the caveat that environmental issues needed to be taken into account.(21)

Second, the interventions have exhibited a second kind of narrowing, with a repeated tendency to reduce theological considerations to 'ethics'. The recent impressive book *Engineering Genesis* by the Society, Religion and Technology project of the Church of Scotland does consider the non-human realm in some detail.(22) However, it focuses on ethical and social concerns, rather than on theological issues. Its approach seems to be an exploration of ethical dilemmas from a Christian perspective in the light of scientific facts, rather than a direct theological engagement with the significance of genetic modification or its associated human and social dynamics.

Third, ‘ethics’ itself has tended to be interpreted so that consequential ethics is given priority over other ethical frameworks. For example, the submission of the Church of England to the House of Commons Science and Technology Committee’s Inquiry into Human Genetics welcomed genetic engineering where it led to improvement of health or treatment of disease, but objected to it where it was used for more cosmetic purposes.(23) John Williams has argued that, in those cases where a deontological ethics is the dominant stance amongst religious groups dealing with public policy issues, such an approach will not be heard in the public domain, as secular language is primarily consequential.(24) Michael Banner, similarly, has observed that ethical debates on regulatory committees are all too often drawn to a narrow consequentialism.(25) *Engineering Genesis* can be welcomed for including a spectrum of ethical positions - but here, too, the consequential approach seems to dominate. In their research they found relatively few cases of intrinsic objections to genetic engineering of non-humans.

Fourth, stances taken toward genetic engineering within the debate in the Churches have tended to be polarised between hostility and resistance at one end, associated with a more popular response, and the gradual acceptance or even growing enthusiasm at the other, associated with more official statements.(26) While the Society, Religion and Technology project quite deliberately takes a mediatory view in the case of genetic engineering of non-humans and promotes this in the Churches at the official and popular level, we suggest that a measure of tension still exists that reflects the tension we discussed earlier between lay and official secular statements. The more hostile responses may be associated with a general suspicion of science and in some cases are undergirded by a reassertion of more traditional theological positions, but this is not always the case. For example, radical eco-feminist approaches to the relationship between God, humanity and the natural world lend themselves to a critique of science, and at least indirectly to all aspects of genetic engineering. In Norway, for example, new groups are developing that search for critical feminist approaches to biotechnology that includes the genetic engineering of non-humans and its impact on the environment.(27) More accommodating or accepting responses for the case of human genetic engineering often draw on traditional Christian notions of stewardship, or even claim that genetic engineering can allow us to become created co-creators with God. While the context of the discussions

about humanity as creating with God are primarily the genetic manipulation of humans, this is then extrapolated to include ideas such as the redemption of nature as such.(28)

Fifth, up to the early 1990s there has been a shift in official responses of the Church to a more positive stance towards genetic engineering, where as we noted earlier the discussion was primarily around the genetic engineering of humans (including the proviso that human greed and irresponsibility needs to be checked).(29) A relatively positive stance seems to have been retained and persisted in many of the later official statements about genetic engineering of non-humans, as we noted earlier. There may be parallels here with the religious shifts that occurred at the time of the industrial and mercantile revolution at the end of the seventeenth century. The Church's original position was to condemn the market and human greed. However, there were increasing moves amongst certain Puritan divines towards a position that sanctioned and celebrated economic individualism itself as a divine calling.(30) Notions of humans becoming co-creators with God through genetic engineering appear to echo this response.

Thus what seems to be lacking overall is a specific theology which takes account of the profound challenges to human beings' self-image, and to their relationships with one another and with the natural world, that are posed by the new genetic technologies.(31) The focus on nature through notions of stewardship or trends to see humans as created co-creators with God appear to be ignoring the ambiguities of response of the kind which have surfaced in the focus groups and the implications of scientific uncertainty and ignorance for truly shared *responsibility*.

Eco-feminism has pointed to the distortion in the human relationship with the natural world, but has not considered adequately the shifts in human identity through genetic engineering; the latter is rather castigated along with the rest of male-dominated science. Pointers to the ways in which the insights from focus groups might create a map for richer theological approaches are proposed in the section that follows.

IV. A Genetically Modified Theology?

We have argued above that the examination of lay speech about agricultural biotechnology reveals a deep sense that biotechnology is challenging people's sense of existential order, as well as society's capacity for shared responsibility. We want to suggest that theological perspectives can help us better understand the character and significance of these public anxieties - and also that listening sensitively to lay discourse can assist theology, by offering clues towards a different kind of theological response to the issues thrown up by biotechnology.

The members of the public who took part in the *Uncertain World* focus groups seemed to have a profound sense both of mystery about the character of the universe, and of the essential openness of nature. This sense seemed profoundly at odds with the sense of certainty with which government regulators seemed to be handling biotechnology at the time that the discussions were held in late 1996. Both the consequentialist language and reductionist evaluative framework embodied in the regulatory processes, and the deonto-logical ethics that often comes more easily to the Churches, seem inadequate responses in the context of these ambiguities. A consequentialist approach to ethics seems unsatisfactory for reflection on the new biotechnologies, not least because of the unknown extent of the uncertainties involved in their diffusion. However, the deontological ethics that has been favoured by some church groups is unhelpful either as it speaks a language that often seems disconnected with the secular ethical debate and is unlikely to be heard outside the Churches.

Perhaps a more promising ethical vocabulary for the present situation may lie in the Wisdom tradition in Jewish and Christian theology. In situations of rapid change and radical uncertainty ethics arguably needs to be carried out in a way that relies less on abstract rules or on knowledge of outcomes, and more on insights arising from the cultivation of character, virtue and judgment. Wisdom signifies discernment, the ability to choose when confronted by a plurality of different factors. The wise person chooses not as an isolated individual, but as a person in community with God, neighbour and the natural world. Those who develop the virtue of wisdom re-examine such a wider sense of self and discern how it might be expressed through particular actions in the human and non-human community of which they are a part. Furthermore, wisdom in the theological sense includes the idea of goodness, that any action is one of righteousness before

God.(32) Wisdom is not so much truncated knowledge-as-information, but the ability to embrace all perspectives and to integrate them. An ethic of wisdom flows from this inner transformation of the person. While the ability to show wisdom has been analysed from a psychological perspective, it is essentially a theological concept. For example, Birren and Fisher suggest that ‘Just as the belief in an all-knowing deity is widespread, there is implicit in our culture a conviction that something like wisdom exists’.(33) They suggest, further, that a fuller appreciation of wisdom ‘will help to develop useful tools to assist world and national leaders in the increasingly complex problems facing humanity’.(34)

Just as lay discourse about biotechnology poses a challenge to our understanding of ‘ethics’, so it does to existing notions of ‘natural order’. In this regard, we would argue, the biotechnological *revolution* - and the challenges its handling poses both to human social relations and to human relations with the natural order - might also be seen as a *revelation*. The various reactions of Jewish theologians to the Holocaust may be instructive here. Many writers attempt to make sense of the Holocaust using existing theological understandings of God’s relation to God’s creatures, and to the Jewish people in particular. Eliezer Berkovitz, for example, argues that there was nothing in the sheer scale of the Holocaust that made it any more problematic than any other disaster in Jewish history for traditional understandings of a God who alternately hides His face and intervenes in history.(35) Other writers, by contrast, interpret the Holocaust as a *novum*, as a revelation after which everything has to be different. For Emil Fackenheim, the Holocaust as an event uniquely resists being seen as part of a cosmic plan; it is nothing more than a turning point in history, after which the maintenance of faith takes on a special significance as a militant resistance to evil.(36) Finally, a third set of responses invites us to see the Holocaust as a revelation not just in the sense of a break with the past, but as an event which sharply reveals what must always have been the case. Richard Rubenstein takes this route to argue for the radical conclusion that after the Holocaust the Jewish people should abandon any traditional notion of a benevolent, omnipotent deity altogether.(37) For Martin Buber, by contrast, the Holocaust demands from Jews a return to the fundamentals of their faith, in order to work back from them to a more adequate understanding of God.(38)

We suggest that theology is faced by a comparable set of options in relation to biotechnology. In suggesting this we do not mean to liken genetic engineering to Nazism, nor GMOs to the victims of the Holocaust. We simply want to suggest that the options for theology in its response to the biotechnology revolution are formally similar to those of Jewish theologians after the Holocaust. First, theologians might take the position that theology can go on much as before, simply regarding genetic engineering as a new, additional domain about which they might be asked to make interpretative or ethical judgments. Second, they might understand it as ushering in a radically new situation - interpreted either as one of elevation of humans to being ‘created co-creators with God’, or as a situation of great potential evil - which demands of them a newly militant intervention in the public domain. Or third, they might see themselves as participants in a public debate about what truths this historically unprecedented event may be revealing about the nature of human existence in the world.

It is at this third level of response, we would suggest, that the novel human dynamics of the new genetics appear to lie. In a number of ways they seem to point towards a kind of theological response that is anything but simpleminded. People, quite prudently, want to resist the enthusiastic rush to embrace the possibilities offered by these new technologies, but they are not closed to the use of the technologies themselves in principle. Indeed, their current hostility may be aimed less at the level of the specific technologies and their applications, and more at that of the model of the human person and the conception of humanity's place in the world implicit in the actions of the industry and its regulators. At the same time, people appear to want to hold on to some notion of order and of a limit to human interference — and yet seem surprisingly open to the idea that our specific understandings of cosmic order and of human identity and responsibility may be on the verge of change. Above all, the public seems to sense the very notion, let alone the practice, of genetic engineering as bringing with it profound and challenging questions about humanity’s place in the world. Yet people experience the institutions responsible for these technologies as apparently not recognising the existence of such questions at all. The conversation that we as a society need to have - and that the public seems to be demanding - is a theological one. The role of theologians must surely be to find a theology adequate to that task.(39)

1 A version of this paper will also appear as a chapter in C. Deane-Drummond and B. Szerszynski (eds), *The Reordering of Nature: Theology, Society and the New Genetics* (Edinburgh: T&T Clark, forthcoming).
2 Ernst and Young, *Biotechnology's Economic Impact in Europe: A Survey of its Future Role in Competitiveness* (London: Ernst & Young, 1994); Commission of the European Communities, White Paper on Growth, Competitiveness and Employment (Brussels: Commission of the European Communities, 1993).
3 For recent discussions, see C. Deane-Drummond, *Theology and Biotechnology: Implications for a New Science* (London: Geoffrey Chapman, 1997); A. Holland and A. Johnson (eds), *Animal Biotechnology and Ethics* (London: Chapman & Hall, 1998).
4 S. Weil, *Gravity and Grace* (London: Routledge, 1952).
5 R. Grove-White, P. Macnaghten, S. Mayer and B. Wynne, *Uncertain World: Genetically Modified Organisms, Food and Public Attitudes in Britain* (Lancaster: Centre for the Study of Environmental Change, Lancaster University, 1999).
6 'The Spiralling Agenda of Agricultural Biotechnology', *ENDS Report*, 283, August 1998,18-30; 'Applying a Biodiversity Brake to Genetically Modified Crops', *ENDS Report*, 289, February 1999, 21-27; 'Government Still Struggling to Master the Biotechnology Agenda', ENDS Report, 292, May 1999, 28-32; Nature: Editorial, 'GM Foods Debate Needs a Recipe for Restoring Trust', *Nature*, 398 (6729), 1999, 639.
7 S. Lash, B. Szerszynski and B. Wynne (eds), *Risk, Environment and Modernity: Towards a New Ecology* (London: Sage, 1996).
8 U. Beck, *Risk Society: Towards a New Modernity*, trans. Mark Ritter (London: Sage, 1992); U. Beck, A. Giddens and S. Lash, *Reflexive Modernization: Politics, Tradition and Aesthetics in the Modern Social Order* (Cambridge: Polity Press, 1994).
9 R. Grove-White and B. Wynne, *Science, Culture and the Environment* (Lancaster: Lancaster University, Centre for the Study of Environmental Change, 1998).
10 Royal Commission on Environmental Pollution, *Response to the Review of the Framework for Overseeing Developments in Biotechnology* (London: RCEP, 1999); ESRC Global Environmental Change Programme, *The Politics of GM Food: Risk, Science and Public Trust*, special briefing no. 5 (Brighton: University of Sussex, 1999).
11 Nine focus groups were held in November and December of 1996. Four of these were held in North London, and consisted of non-working mothers, working mothers, fathers, and green consumers (mixed gender) respectively. The other five were held in Lancashire, and were made up of working women, non-working mothers, churchgoers (mixed gender), male risk takers, and schoolgirls. For more details of the groups, and of the topic guide used to direct the discussion, see Grove-White et al., *Uncertain World*. We are grateful to Phil Macnaghten for allowing us to perform this secondary analysis of the transcripts.
12 The dismissal of intrinsic ethical views by influential spheres of government, academia, industry and commerce has been noted by the authors of Engineering Genesis; see D. Bruce and A. Bruce, *Engineering Genesis: The Ethics of Genetic Engineering in Non-Human Species* (London: Earthscan, 1998), 82.
13 ESRC Global Environmental Change Programme, *The Politics of GM Food*
14 For further discussion, see C. Deane-Drummond, 'Come to the Banquet: Seeking Wisdom in a Genetically Engineered Earth', *Ecotheology*, 9, 2000, 27-37.
15 *Personal Origins* (London.1 Church of England Board for Social Responsibility, 1985); *Genetic Intervention on Human Subjects* (London: Catholic

Bishops' Joint Committee on Bioethical Issues, 1996).

16 The issue was first discussed at the 1979 conference in Cambridge, Massachusetts, entitled ‘Faith, Science and the Future’. See P. Albrecht (ed.), *Faith and Science in an Unjust World*, vol. 2 (Geneva: WCC, 1980). Later documents update the same theme, such as *Manipulating Life* (Geneva: WCC, 1982).

17 A. Dyson, ‘Genetic Engineering in Theology and Theological Ethics’, in *Ethics and Biotechnology*, ed. A. Dyson and J. Harris (London: Routledge, 1994), 263. His view is supported by the observation that where the debate is broadened to include issues such as environment and justice, it tends to exhibit a more hostile approach to both science and genetic technology. John Williams believes that the suspicion of genetics found in some WCC documents is related to the emphasis on justice. J. R. Williams, *Christian Perspectives on Bioethics: Religious Values and Public Policy in a Pluralistic Society* (Ottawa: Novalis, 1997), 57-61.

18 The Church of Scotland General Assembly reports on animal cloning in the context of genetic engineering (1997), patenting (1997) and genetically modified food (1999), alongside society, religion and technology submissions to the Banner committee on animal technologies (1994), and to Nuffield (1995) and the Department of Health (1996) on xenotransplantation are just some examples of reports that present a fuller picture of the ethical issues involved. See Bruce and Bruce, *Engineering Genesis*. The Methodist Church has also addressed the specific question of making debates about genetic engineering accessible to a wider Church audience in the publication of study packs, such as the most recent *Making Our Genes Fit: Christian Perspectives on the New Genetics* (London: Methodist Church, 1999).

19 Response of the Church of England Board for Social Responsibility to the Nuffield Council on Bioethics Consultation Document on Genetically Modified Crops, August 1998. The earlier report of the Ministry of Agriculture, Fisheries and Food’s committee, also chaired by John Polkinghorne, similarly found no fundamental objections to genetic modification of food on religious grounds. MAFF, *The Ethics of Genetic Modification and Food Use* (London: HMSO, 1984).

20 Pope John Paul II, 'The Ethics of Genetic Manipulation', speech to World Medical Association, Origins, 13 (23), 17 November 1983, 339.

21 G. Ancora, E. Benvenuto, G. Bertoni et al., *Biotechnologie, animali e vegetali: Nuove fontiere e nuove responsabilita* (Vatican City: Libreria Editrice Vaticana, 1999).

22 Bruce and Bruce, *Engineering Genesis*.

23 General Synod of the Church of England Board for Social Responsibility's submission to the House of Commons Science and Technology Committee's Inquiry into Human Genetics, chaired by the Bishop of Liverpool, David Shepherd, January 1995. For a range of Roman Catholic views on the ethics of genetic engineering, with a focus on human genetics, see M. Junker-Kenny and L. S. Cahill (eds), *The Ethics of Genetic Engineering* (London: Concilium/SCM Press, 1998).

24 Williams believes that arguing from principles, by which he means arguing from a deontological perspective, is a general characteristic of the Churches' response to policy issues surrounding the new reproductive technologies. He believes that it accounts for the poor reception to their statements at a secular level. However, his extrapolation of this finding to a general conclusion that Churches prefer arguing from principles is not really justified, especially in view of the consequential approach discussed here. See Williams, *Christian Perspectives on Bioethics*, 73,135.

25 M. Banner, ‘Ethics, Society and Policy: A Way Forward’, in *Animal*

Biotechnology and Ethics, 325-339.

26 For example, the chairman of Christian Ecology Link, Tim Cooper, has specifically called for the church commissioners to disinvest in companies that are involved in GM trials, exploring opportunities for investment in organic foods instead. He rejects the idea that the Church of England has arrived at an agreed policy on this issue. Press release, *Christian Ecology Link*, 25 November 1999.

27 D. Kaul, 'Eco-News from across the World: Eco-Feminism in the Nordic Countries', *Ecotheology*, 2,1997,100-108.

28 T. Peters, *Playing God* (London: Routledge, 1997); R. Cole-Turner, *The New Genesis: Theology and the Genetic Revolution* (Louisville, KY: Westminster/John Knox, 1993); P. Hefner, *The Human Factor: Evolution, Culture and Religion* (Minneapolis: Fortress Press, 1993).

29 Such as those from the World Council of Churches.

30 W. Coleman, 'Providence, Capitalism, and Environmental Degradation: English Apologetics in an Era of Economic Revolution', *Journal of the History of Ideas*, 37 (1), 27-44.

31 While there has been much fluent discussion amongst theologians and ethicists of the relationship between humanity and nature, this is in the context primarily of *environmental concerns*, rather than genetic engineering as such. See, for example, M. Northcott, *The Environment and Christian Ethics* (Cambridge: Cambridge University Press, 1996); R. Page, God and the Web of Creation (London: SCM Press, 1996).

32 On the idea of the relationship between wisdom and goodness, see D. Hardy, 'The God Who is with the World', in *Science Meets Faith*, ed. F. Watts (London: SPCK, 1998), 136-153.

33 J. E. Birren and L. M. Fisher, 'The Elements of Wisdom: Overview and Integration', in *Wisdom: Its Nature, Origins and Development*, ed. R. J. Sternberg (Cambridge: Cambridge University Press, 1990), 319.

34 Birren and Fisher, 'Elements of Wisdom', 332.

35 E. Berkovitz, *Faith after the Holocaust* (New York: Ktav, 1973).

36 E. Fackenheim, *God's Presence in History* (New York: New York University Press, 1970).

37 R. Rubenstein, *After Auschwitz: Radical Theology and Contemporary Judaism* (New York: Bobbs-Merrill, 1966).

38 M. Buber, *Good and Evil: Two Interpretations* (New York: Scribner's, 1953).

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